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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/028,880	12/20/2001	Ta-Ko Chuang	B-4442 619416-6	4650

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EXAMINER
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KILKENNY, TODD J

ART UNIT	PAPER NUMBER
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1733

DATE MAILED: 10/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/028,880	CHUANG ET AL.	
	Examiner	Art Unit	
	Todd J. Kilkenny	1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 08 August 2003.
- 2a) ☒ This action is FINAL.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,4-8,10 and 11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,4-8,10 and 11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                             | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other:  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 and 4 – 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Admitted Prior Art (Specification, page 1, line 14 – page 2, line 8) in view of Choo et al (US 6,297,869) and Kishida et al (US 6,361,867).

Applicant's admitted prior art discloses a conventional method for bonding an integrated circuit device to a glass substrate which includes grinding the edges of a glass substrate via a mechanical grinding device that forms a beveled angle to eliminate sharp edges that can damage the integrated circuit device during bonding (see Figures 1a – 1e). The admitted prior art further suggests bonding the integrated circuit to a protecting circuit (Specification, page 1, line 14 – page 2, line 8; Figures 1a – 1f). It is noted that the protecting circuit of the admitted prior art process is recognized as extending to the edge of the glass substrate. It therefore appears applicant's claimed invention as recited in claim 1 differs from the conventional prior art process by employing laser devices to heat and melt the edge of the glass substrate and the protecting circuit as opposed to a mechanical grinding device, wherein employing laser devices comprises a first laser device to heat and melt a predetermined portion of the

protecting circuit and employing a second laser device to melt the edges of the glass substrate to form the desired smooth edge.

In US 6,297,869 B1, Choo et al teach a method for manufacturing a substrate and a liquid crystal display panel. Choo et al teach a grinding step to remove glass chips remaining at edges of the substrate to protect against damage to a printed circuit board attached thereto. Choo et al disclose as an alternative to a conventional grinder, employing a laser grinder as grinding by laser prevents static charges from generating due to friction on the substrate, which further protects the circuit components on the substrate (Col. 2, lines 5 – 24; Col. 3, lines 14 – 16; Col. 6, lines 50 – 55).

In US 6,361,867 B2, Kishida et al disclose alternative smoothing processes for edges of glass substrates and in the embodiment of Figure 2B, Kishida et al illustrate a smoothing process of mitigating a rough edge surface of a glass substrate thru a heating/melting process to provide the processed edge with a rounded rough surface (Col. 4, lines 53 – 63).

It would have been obvious to one of ordinary skill in the art at the time of the invention to employ a laser to grind/smooth the edge of the admitted prior art glass substrate as opposed to the known conventional mechanical grinder in view of Choo et al disclosing a laser grinder as an alternative to a conventional grinder as laser prevents static charges from generating due to friction on the substrate. Furthermore, Kishida et al is provided as support to suggest smoothing includes a heating and melting process, which one of ordinary skill in the art would readily appreciate the laser of Choo et al would provide.

As to two laser devices, Choo et al further disclose employing laser to cut a glass substrate of liquid crystal display, wherein the glass substrate is provided with a buffer layer made of metal. In cutting the glass substrate, Choo et al recognize that the metal buffer layer needs to also be cut and in view of the buffer layer and glass substrate comprising different materials, Choo et al disclose two lasers, each providing different wavelengths of energy light to cut the metal layer and glass substrate, respectively (Fig. 17; Col. 10, line 1 – Col. 11, line 40).

Therefore, in view of Choo et al's recognition to provide two laser devices, each providing unique laser energy to effectively and specifically work upon two different components, a metal buffer layer provided on a glass substrate and the glass substrate itself, and in view of the admitted prior art process including a protecting circuit provided on the glass substrate, it would have been obvious to one of ordinary skill in the art at the time of the invention to employ two laser devices in smoothing the edge of the glass substrate, one of which being of a defined wavelength to melt metal so as to remove the protecting circuit at the edge and the second being of a defined wavelength to melt glass so as to smooth the glass substrate edge.

As to dependent claims 4 and 5, the integrated circuit device disclosed in the admitted prior art process comprises a driver circuit, a connecting wire, and a protecting circuit connected with an external circuit as claimed by applicant.

3. Claims 7, 8, 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Admitted Prior Art (Specification, page 1, line 14 – page 2, line 8) in view of Kishida et al (US 6,361,867 B2).

Applicant's admitted prior art discloses a conventional method for bonding an integrated circuit device to a glass substrate which includes grinding the edges of a glass substrate via a mechanical grinding device that forms a beveled angle to eliminate sharp edges that can damage the integrated circuit device during bonding and as illustrated the method includes bonding a first portion of an integrated circuit device to a glass substrate so that a gap is formed between a second portion of the integrated circuit device and the edge of the glass substrate (see Figures 1a – 1e).

In US 6,361,867 B2, Kishida et al disclose alternative smoothing processes for edges of a glass substrate (Figures 2A – 2E; Col. 4, line 43 – Col. 5, line 38; Col.6, line 1 – Col. 8, line 12).

In the embodiment of Figure 2E, Kishida et al suggest a smoothing process incorporating an optical setting resin, wherein at least an edge area of the glass substrate is coated with said resin to form a new smooth edge (Col. 5, lines 29 – 38).

In view of this teaching to Kishida et al, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide a hard resin (e.g. an optical setting resin) coating to the edge of the glass substrate of the admitted prior process to smooth the edge of the glass substrate and sufficiently suppress the rough surface effects of extending cracks, wherein in view of the admitted prior art process teaching to bond a first portion of an integrated circuit device a glass substrate so that a gap is

formed between a second portion of the integrated circuit device and the edge of the glass substrate, one of ordinary skill in the art in following the suggestion of Kishida et al to coat the edge would have been directed to introduce the hard resin into the gap so as to cover and smooth the edge.

As to claim 8, in view of Kishida et al teaching an optical setting resin, it would have been obvious to one of ordinary skill in the art to cure the resin by ultraviolet as ultraviolet light is a well known, conventional per se, light source for optical setting resins.

As to dependent claims 10 and 11, the integrated circuit device disclosed in the admitted prior art process comprises a driver circuit, a connecting wire, and a protecting circuit connected with an external circuit as claimed by applicant.

### ***Response to Arguments***

4. Applicant's arguments filed 8-8-03 have been fully considered but they are not persuasive.

The rejection over claims 7 and 8 to Nakamura et al has been withdrawn and therefore applicant's arguments with respect to Nakamura et al are moot.

Applicant's arguments against independent claim 1 and the requirement for first and second laser devices, the first laser device used to remove the protecting circuit and the second laser device used to melt to smooth the edge of the glass substrate are not persuasive.

As presented above, the primary reference applied is the admitted prior art process disclosure, which suggests bonding an integrated circuit onto a protecting circuit provided on a glass substrate. Choo et al is initially provided to render obvious laser grinding to smooth the edge of glass substrates as opposed to the conventional mechanical grinding of the admitted prior art process so as to prevents static charges from generating. Furthermore, while not directed to the edge laser grinding disclosure, Choo et al also recognize the need to employ two different lasers, each having there own wavelength, when working on different materials. In this disclosure, Choo et al teach cutting through a metal buffer layer provided on a glass substrate with a first laser device having a first wavelength and thereafter cutting through the glass substrate positioned below the buffer layer with a second laser device having a second wavelength. This recognition to provide two laser devices to remove two different materials in a bonded assembly would have motivated one of ordinary skill in the art to employ two laser devices when smoothing the edges of the admitted prior art process, the first laser being of a first wavelength to most effectively melt metal to remove the protecting circuit positioned at the edge of the glass substrate and the second laser being of a second wavelength to most effectively melt glass to smooth the edge of the glass substrate.

### ***Conclusion***

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).




A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Todd J. Kilkenny** whose telephone number is (703) 305-6386, or if attempting to contact after Jan 1, 2004, (571) 273-1219. The examiner can normally be reached on Mon - Fri (9 - 5).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

TJK

TJK

  
JEFF H. AFTERGUT  
PRIMARY EXAMINER  
GROUP 1300